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EXAMINER	
SIMONE, CATHERINE A	
ART UNIT	**PAPER NUMBER**
1772	

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E1

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/700,060	Applicant(s) KONDO ET AL.	
	Examiner Catherine Simone	Art Unit 1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-19,21,23-29 and 33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 4-19, 21, 23-29 and 33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Head et al. (4,730,428).

Head et al. discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 1, #5), with a rib structure which is interposed between the sandwich structures (Fig. 1, #3) and integrally molded by a resin transfer molding process to the sandwich structures, the sandwich structure comprises a pair of sheets comprising fibre reinforced plastic (Fig. 1, #2A and #2B) is arranged with a gap between them and a rib structure (Fig. 1, #3) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 1-3). However, Head et al. fails to disclose the sandwich structure having a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m. Therefore, one of ordinary skill in the art would have to determine the length and width through routine experimentation depending on the desired end results as shown by Head et al.

Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the sandwich structure in Head et al. have a length of

from 10 m to 25 m and a width of from 1.5 m to 3.5 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Furthermore, it is to be noted that the limitation "integrally molded by a resin transfer molding process" is a process limitation and process limiations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself.

3. **Claims 1-5, 10-19, 21, 23-25** and **33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4), with a rib structure (Fig. 4, #44) which is interposed between the sandwich structures and integrally molded by a resin transfer molding process to the sandwich structures, the sandwich structure comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the sandwich structure having a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m. Therefore, one of ordinary skill in the art would have to determine the length and width through routine experimentation depending on the desired end results as shown by Rothman.

Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the sandwich structure in Rothman have a length of from 10 m to 25 m and a width of from 1.5 m to 3.5 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Furthermore, it is to be noted that the limitation "integrally molded by a resin transfer molding process" is a process limitation and process limiations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself.

Regarding **claims 2**, **4** and **16-18**, Rothman fails to disclose the pair of sheets having a thickness of from 2-10 mm, the rib having a thickness of from 1-3 mm, a ratio of the sandwich structure's overall thickness to each of the sheet's thickness in the range 5:1 to 25:1, the sandwich structure having a density that is no more than 100 kg/m^2 and a flexural rigidity of the sandwich structure that is at least 5×10^7 kg/mm^2. Therefore, one of ordinary skill in the art would have to determine the specific thickness of the sheets and of the rib, the specific density of the sandwich structure, a ratio of the sandwich structure's overall thickness and the specific flexural rigidity through routine experimentation depending on the desired end results as shown by Rothman. Thus, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the pair of sheets have a thickness of from 2-10 mm and to have the rib have a thickness of from 1-3 mm and to have a ratio of the sandwich structure's overall thickness to each of the sheet's thickness in the range 5:1 to 25:1, the sandwich structure

having a density that is no more than 100 kg/m^2 and a flexural rigidity of the sandwich structure that is at least 5×10^7 kg/mm^2 in Rothman, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art absence of showing unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

Regarding **claim 13**, Rothman fails to disclose at least one of the sheets having a jagged form in which there are alternatively arranged peaks and troughs. Normally, it is to be expected that a change in shape of the sheet would be an unpatentable modification. Under some circumstances, however, changes such as shape may impart patentability to a product if the particular shape claimed produces a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. *In re Dailey et al*, 149 USPQ 47 CCPA 1966.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to change the shape of at least one of the sheets in Rothman to have a jagged form in which there are alternatively arranged peaks and troughs. One skilled in the art would have been motivated to do so in order to form a fibre reinforced roofing material, since it has been held that the change in form or shape of at least one of the sheets would be an unpatentable modification absence of showing unexpected results.

Regarding **claim 5**, the reinforcing fibre of the fibre reinforced plastic inherently comprises a multiaxial woven material having a fibre direction at an angle of $45 \pm 10^\circ$ to the lengthwise direction of the rib structure (see col. 6, lines 15-17). Regarding **claim 10**, note the gap provides a uniform spacing along the lengthwise direction of the sheets (Fig. 5, #62 and #64). Regarding **claim 11**, note the gap provides a spacing that varies along the lengthwise

direction of the sheets (Fig. 4, #22 and #24). Regarding **claim 12**, note there is arranged, in the gap, a filler (Fig. 4, #58) having a specific gravity lower than the specific gravity of each pair of sheets (see col. 8, lines 60-68). Regarding **claim 14**, note a rigid structure (Fig. 4, #44) arranged in the gap (Fig. 4, #58). Regarding **claim 15**, note a connecting member for connecting to another member is fitted to an outer face of at least one of the sheets (Fig. 4, #26). Regarding **claims 19**, note a cross sectional shape is flat sheet shaped (see col. 4, lines 59-61). Regarding **claim 21**, note a shape in the lengthwise direction that is a circular arc (see col. 4, lines 59-61). Regarding **claim 23**, note a gap is formed between adjacent fibre reinforced plastic roofing materials in the widthwise direction (Fig. 4, #50). Regarding **claim 25**, note at least one of the sheets comprises a matrix resin comprising phenolic resin (see col. 5, lines 58-61). Regarding **claim 33**, note there is a core material in the gap (Fig. 4, #58) and there are present, in the core material, through-holes running from an upper face to a lower face (see col. 8, lines 60-68).

4. **Claims 6**, **7** and **29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Shiraishi et al. (5,928,772).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the fibre reinforced plastic being carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre. Shiraishi et al. teaches it is old and well-known in the analogous art

to have a fibre reinforced plastic being of carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre (see col. 2, lines 62-67) for the purpose of producing a fibre reinforced plastic roofing material which is superior to in its lightweight properties and rigidity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the fibre reinforced plastic in Rothman consist of either carbon fibre reinforced plastic or a hybrid fibre reinforced plastic of carbon fibre and glass fibre as suggested by Shiraishi et al. in order to produce a fibre reinforced plastic roofing material which is superior to in its lightweight properties and rigidity.

5. **Claims 8** and **9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Johnson (3,920,871).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose the reinforcing fibre being a woven material. Johnson teaches it is old and well-known in the art to have a reinforcing fibre be of a woven material (see col. 3, lines 52-59) for the purpose of producing a fibre reinforced plastic material having a strong, rigid and unitary structure.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the reinforcing fibre in Rothman be a woven material as

suggested by Johnson in order to produce a fibre reinforced plastic material having a strong, rigid, and unitary structure.

6. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Bogner et al (4,361,613).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose a linked region covered with a waterproof member. Bogner et al. teaches it is old and well-known in the analogous art to have a linked region covered with a waterproof member (see col. 2, lines 24-31) for the purpose of producing a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have covered the linked region in Rothman with a waterproof member as suggested by Bogner et al. in order to produce a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction.

7. **Claims 26-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rothman (4,078,348) in view of Bogner et al. (4,361,613).

Rothman discloses a fibre reinforced plastic roofing material comprising two or more sandwich structures butt joined in the widthwise direction (Fig. 4) and comprises a pair of sheets

comprising fibre reinforced plastic (Fig. 4, #22 and #24) is arranged with a gap between them and a rib structure (Fig. 4, #44)) which is integrally molded by a resin transfer molding process to the pair of sheets is interposed, wherein the fibre reinforced plastic includes a reinforcing fibre that is a glass fibre (see col. 3, lines 65-68). However, Rothman fails to disclose a fire-resistant material provided at least on one face of the fibre reinforced plastic roofing material. Bogner et al. teaches it is old and well-known in the analogous art to have a fire resistant material provided on at least one face of a fibre reinforced plastic roofing material (see col. 2, lines 55-59) for the purpose of providing improved fire safety and emitting minimal amounts of smoke and other combustible materials under extreme conditions of heat and partial degradation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided a fire resistant material on at least one face of the fibre reinforced plastic roofing material in Rothman as suggested by Bogner et al. in order to provide improved fire safety and emit minimal amounts of smoke and other combustible materials under extreme conditions of heat and partial degradation.

Regarding **claims 27** and **28**, Bogner et al. fails to disclose the fire-resistant material containing either rock wool or phenolic foam. It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have the fire-resistant material in Bogner et al. contain either rock wool or phenolic foam, since it had been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice and it would be entirely obvious absence of showing unexpected results. *In re Leshin*, 125 USPQ 416.

Response to Arguments

8. Applicant's arguments filed October 29, 2003 have been fully considered but they are not persuasive. Applicants states that "the specification of the present application describes how a rib structure which is integrally molded by a resin transfer molding process to the pair of sheets on page 28, line 30 to page 31, line 2. The Examiner is respectfully requested to review this portion of the disclosure and should conclude that the pultrusion process of Head does not disclose the resin transfer molding process of the present application." Applicant further argues that "Clearly, one of ordinary skill in the art could not substitute the pultrusion process of Head for the resin transfer molding process of the present invention, when it would not be possible to create, by pultrusion, structures of the size required by claim 1." However, it is to be pointed out that the limitation "integrally molded by a resin transfer molding process" is a process limitation and process limitations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 946, 966 (Fed. Cir. 1985) and MPEP §2113.

Furthermore, Applicants argue that "Rothman is incorrectly characterized as illustrating "a rib structure which is integrally molded by a resin transfer molding process to the pair of sheets". There is, in fact, no suggestion by Rothman that members 22, 24, and 44 are made by a resin transfer molding process. As noted in col. 7, lines 18-21 and 34-38, "[t]he F-shaped pultrusion angle member forming the side walls of the embodiment of the present invention

shown in Fig. 4 are formed by pulling the resin through an F-shaped die.... The reinforcing members may be made by the same process used to make the pultrusion angle members forming the side walls of the panel. Thus, it is proper to refer to reinforcing members 44 and 54 as pultrusion reinforcing members."" However, it is to be pointed out again that the limitation "integrally molded by a resin transfer molding process" is a process limitation and process limitations are given little or no patentable weight. The method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 946, 966 (Fed. Cir. 1985) and MPEP §2113.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Catherine Simone whose telephone number is (571)272-1501. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-0987.

Catherine Simone
Examiner
Art Unit 1772
January 6, 2004

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

1/12/04